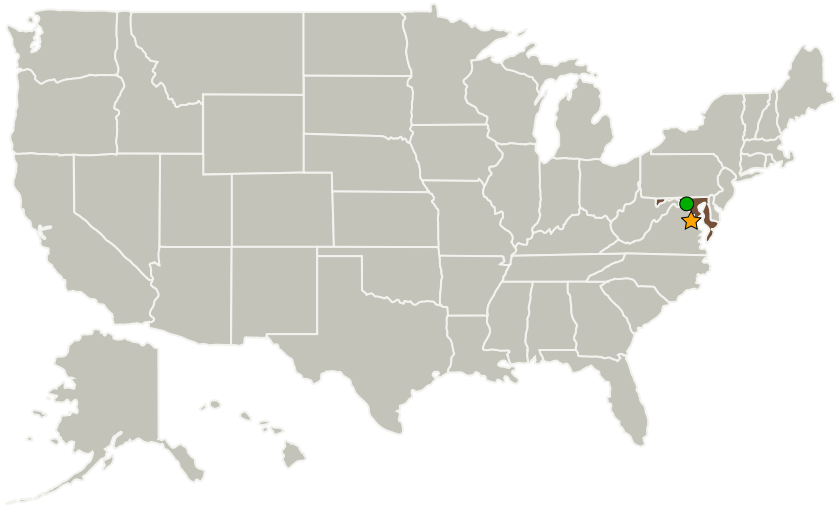
IceCube: Spaceflight Validation of an 883-GHz Submillimeter Wave Radiometer for Cloud Ice Remote Sensing (IceCube)

Completed Technology Project (2014 - 2017)

Project Introduction

Develop and validate a commercially available flight-qualified 874-GHz receiver to enable future cloud ice remote sensing from space Technologies include submillimeter wave 874-GHz receiver (subharmonic mixer, frequency doubler and tripler, V-band multiplied-amplified local oscillator); intermediate frequency (IF) calibration (noise injection and LO power modulation and monitoring). Performance goals are noise temperature < 6000 K with 2-K calibration error over operating temperature range. Retire risk of ice-cloud radiometers in missions like the Decadal Survey's Aerosol, Cloud and Ecosystem (ACE) mission

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★NASA Headquarters(HQ)	Lead Organization	NASA Center	Washington, District of Columbia
●Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

IceCube: Spaceflight Validation of an 883-GHz Submillimeter Wave Radiometer for Cloud Ice Remote Sensing

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Science Mission Directorate (SMD)

Lead Center / Facility:

NASA Headquarters (HQ)

Responsible Program:

Earth Science

IceCube: Spaceflight Validation of an 883-GHz Submillimeter Wave Radiometer for Cloud Ice Remote Sensing (IceCube)

Completed Technology Project (2014 - 2017)

Primary U.S. Work Locations

Maryland

Project Management

Program Director:

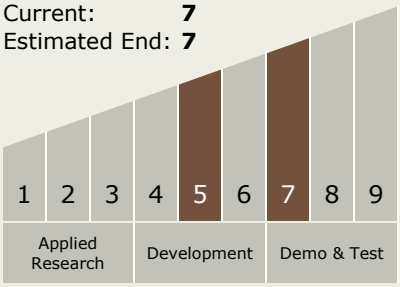
George J Komar

Principal Investigator:

Dongliang Wu

Technology Maturity (TRL)

Start: **5**
Current: **7**
Estimated End: **7**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves

Target Destination

Earth